

THE LEAST SANDPIPER DURING THE NESTING
SEASON IN THE MAGDALEN ISLANDS.

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Plates XIII, XIV.

THE habits described in this paper were noted in the Magdalen Islands, Gulf of St. Lawrence, during the period, June 17 to July 2, 1911. Most of these days were spent in the vicinity of Grosse Isle, the fishing village at the northeast end of the "Lagoon." This peculiar body of water, twenty-five miles long by two or three wide, is bulwarked against the sea on both sides by a narrow stretch of dunes, wind-tossed mile after mile to weird and mammoth shapes of sand, but here and there blown flat into low areas. One of these just east of Grosse Isle has taken the form of a salt marsh and has become the chief nesting-locales of *Pisobia minutilla* for the eastern portion of the islands.

The marsh itself is a large one, for here the distance from gulf to lagoon is over a mile, the whole of this width, save for the dunes on the gulf-side, being covered by its surface. In the other direction it is irregular, being invaded here and there, and in places almost bisected, by tongues of solid earth, sufficient to support a growth of stunted spruces and bayberries. On our arrival no conspicuous flowers flaunted bright colors in any part of this area, for the Blue Flags had not yet bloomed on the edges and the Buckbeans (*Menyanthes trifoliata*) so profuse in a deeper marsh at East Point, were entirely absent. The whole surface was sombre, absolutely unrelieved, all in tones of gray and dark green. A more dreary waste of water and muck can hardly be imagined! Fully a third is water distributed in shallow patches, the rest water-soaked hummocks, dry only on the grassy tussocks that tuft the marsh here and there. On these hillocks the Wilson's Snipes conceal their nests, but the Least Sandpipers place theirs in tufts of short marsh grass surrounding the larger tussocks.

As one slops over the marsh the little Sand-peeps begin to pipe anxiously and soon one whirls up into the sky to repeat over and



1. ADULT LEAST SANDPIPER, IDENTIFYING NEST CONCEALED BY STICKS.



2. YOUNG LEAST SANDPIPERS ABOUT THREE DAYS OLD.

over a pathetic little flight song. By this time the more abundant and more vociferous Wilson's Snipes are hurtling about in tumultuous excitement, those, concerned with young near at hand, making spectacular dives to earth, there to grovel and flutter, while others are cutting eccentric figures overhead and ever and anon sharply plunging down the skies to the accompaniment of their wild wing-songs. Other species, too, are demanding attention: the Savannah Sparrows buzz on all sides, Rusty Blackbirds hoarsely rasp from the marsh-edges, Blackpolls clink their pipes in the bayberry clumps, and Fox Sparrows innumerable bell from the surrounding hills. Nevertheless the Sandpiper and the Snipe seem the rightful owners of the marsh, the only ones that require just such a wet situation and no other for the setting of their homes.

All told we found five nests of the Least Sandpiper, four of them close together at the southwest end of the marsh, in an area not over a hundred yards in diameter. The fifth nest was discovered by my companion, Mr. Wm. L. Baily, in the damp end of a grassy field, where it borders the marsh along its southern margin. All of the nests were in damp situations and those in the marsh were on ground so sponge-like that one could not kneel without getting wet. Adequate protection from the dampness was afforded three of the marsh nests by a layer of dead, chocolate-colored leaves, presumably secured from the bayberry bushes. The lining of the fourth nest consisted of narrow strips of glistening white Eel-grass, *Zostera marina*, which not only bottomed the nest-concavity, but also curled its surplus of satin strands out and around the grassy tuft into a most conspicuous and charming decoration. Conspicuous as it was against the dark background, it was not absolutely tell-tale, for similar curls were scattered about the neighborhood and decreased the danger of discovery. The field nest was lined with grass which harmonized perfectly with the standing grasses that met above and made detection difficult. The customary lining seems to be leaves, and nests, so lined, though couched in short grass and open to view, are in reality well-concealed, for the chocolate-blotched eggs are almost invisible in their dark setting.

Four eggs were ultimately the complement of all the nests, though one when discovered, contained but a single egg. These were indistinguishable in shape and size, but varied considerably in

amount and arrangement of markings. One set was so heavily blotched with varying shades of dark brown that the background was hardly visible at any point, while a second set was blotched only about the larger end and spotted on the sides and small end. The general appearance of the second was buffy, while that of the first was chocolate. Still a third set differed from these in having two dark eggs like the first and two light like the second.

All four of the marsh nests were found on June 17, when three possessed the full complement of eggs. By June 22 the nest, which had on the 17th but one egg, now contained four. On this same date, the 22nd, eggs of one of the marsh nests hatched and these chicks left the home before the morning of the 24th. The 24th also witnessed the discovery of the field nest, which at that time contained four eggs somewhat incubated. These hatched between June 25th and July 1st. It appears from this that some of the females must have begun laying as early as June 5, and on the other hand, one certainly did not start much before the 16th. It must be remembered that this season, as far as the Magdalen Islands were concerned, was late and unusually wet. Unfortunately I have no dates, other than those given above, from which to calculate the length of the incubation period. All that I can definitely assert is that it lasts longer than seven days. Not until the clutch is complete does incubation begin, for all the eggs in one nest hatched within a period, not longer than twenty-four hours. There is a possibility that two broods are reared, since one female, collected on the 24th after she flushed from the set, not completed till the 22nd, exhibited a red-centered condition of four of the ovaries, which made the laying of a second set potentially possible.

The young are certainly precocious, leaving the nest at least by the first day after birth and, thereafter, being able to find their food and take care of themselves. At sunset, June 22, the first egg of one clutch hatched before my eyes and forty hours later on June 24 all of the young had left the nest. The parent who had brooded them was walking about, within a few feet of the deserted home but despite diligent search, no trace of her young could be discovered. At this early stage of development their various shades of cinnamon and brown render them inconspicuous and their small size completes

an equipment sufficient for absolute safety, as long as they remain in the dark marshes. That they do not stay there long, I feel confident, for a parent and two young, not over three days old, were discovered by us on July 2 in a stretch of sand, bordering the beach and a long distance from a possible nesting-locality. Here against this white background, relieved only by spikes of grass, they were very conspicuous and the lack of protection made the parent frantically anxious. Piping a frenzied flight song, she whirled over our heads and dashed to earth, there to trail excitedly in a vain effort to confuse attention. To protect, to warn, to guide in the search for food, these seem to be the chief parental functions at this stage. That the young are able to find food and water for themselves, we had evidence the next day, for these two were kept over night and, when they were let loose, ran at once to a stream of water coursing across the beach, boldly waded in and drank deep. Quite as adept they were in finding food. Our attempts to recatch these nimble youngsters brought to light a use of wing, I would not have credited to two-day old chicks. At the moment of imminent capture they would raise their featherless flippers and flap them vigorously, as if anticipating a surer method of escape in the near future!

Interesting as this precocity was, it did not appeal to me so much as the guileless disposition of the adult birds. From a customary gunner's experience with Shore-birds I expected these abused Sand-peeps to be extremely shy in their northern homes. The truth was a revelation of gentleness of character, apparently inherent in the whole species, in astounding contrast with the bitter treatment, accorded them on our southern beaches. Never have I known any birds more docile, more absolutely free from the resentful instinct, than these wee fluffs of life. My caged canary when suddenly disturbed, pecks and scratches, but these wild Sand-peeps permitted themselves to be caught and handled without once resorting to natural weapons of defense. Indeed all their actions about the nest in the presence of human beings indicate a nature at once bold and gentle, fearless and tame, combined in a disposition about as lovable as that of any wild creature I know, and this despite the fact, that they are as consistently "collected" on the nesting-grounds, as they are shot on the migration beaches.

It is surprisingly easy to get on friendly terms with them and, once a friendly relation is established, the revelation of life-secrets follows as a natural consequence.

The birds do not flush directly from the nest like many ground-nesting species, but invariably walk or run fifteen feet or more, before flying. This habit was characteristic of all five brooding birds, particularly at the time of nest-discovery. Later it was modified by increasing familiarity, indeed two birds became so tame that they would not leave, unless threatened with foot or hand. With them flight was a premeditated action, rarely incited by fear. The customary response to the stimulus of man's presence was as follows: At a distance of fifteen feet from me the brooder would raise itself an inch from the nest and watch my approach. If my movement was extremely slow, it would drop back on the eggs, but at my third or fourth step later would rise again and walk a foot away, stop, and gaze at me doubtfully. This action was performed in erect attitude with no attempt to crouch or conceal. The next move was to run swiftly off fifteen or twenty feet and launch into flight (sometimes accompanied by song), provided it was the initial meeting. If she was used to me, she would circle about among the hummocks approaching again from various directions. At this point, if I remained motionless, she would invariably return by short running hitches and boldly gather the eggs under her. My next step would start her again and a sudden movement would produce one of two results: Either she would flutter up a few feet into the air, like a slow-flapping moth, and drop again a few feet ahead, or else she would trail and vibrate the "broken wing." All the birds used the latter trick at one time or other, but they did so sporadically, rarely employing it at the moment of leaving the nest. A marked feature of this manoeuvre was the wide-spreading of the tail fan-shaped, showing a conspicuous amount of white. A supplementary action was to grovel in some mud-depression and flutter the half-shut wings rapidly for several seconds, or else to slide slowly forwards on the belly. During this performance a high call-note was constantly uttered resembling the cries of young birds. (Call record No. 1.)

So far the actions described were common to each Least Sand-

pipper and would incline one to believe they lacked individuality. Quite the opposite was true; each one was highly individualized, so that it could be distinguished easily by some marked trait. For instance, one bird on leaving the nest invariably ran directly towards me, no matter from what direction I came or how close I was, and walked about my feet in imminent danger of being trod

SONG RECORDS

1. Presto. $\text{♩} = 120$
 2. $\text{♩} = 120$
 3. Presto $\text{♩} = 126$
 4. $\text{♩} = 120$ 28va
 pe-dee pe-dee pe-dee pe-dee pe-dee pe-

CALL RECORDS

1. $\text{♩} = 100$ 28va
 2. $\text{♩} = 138$ 28va
 3. 28va
 4. $\text{♩} = 216$ 28va
 5. $\text{♩} = 216$ 28va
 6. $\text{♩} = 216$ 28va
 7. 48va

upon, if I confined my attention to the camera. Though two others were much tamer, neither showed this surprising trait. The action was not threatening, but anxious or merely nervous. A second bird developed a habit of lifting the grasses, we trod down about its nest, a third was quite shy and two others were extremely tame. Furthermore the flight songs of the three brooders I heard sing, were characteristically different and easily distinguishable.

Discovering how guileless the two tame parents were, I naturally devoted most of my time to them. One was the owner of the Eel-grass nest in the marsh, the other of the grass nest in the field. This bird hereafter designated the "marsh bird," was disclosed to us by a village boy, who was trying to catch her with his cap, a trick which he probably would have accomplished. Even while

Mr. Baily was focussing his camera within three feet of the nest, she walked up to it and covered the eggs as unconcernedly, as if we were miles away. There were three of us present, talking and conversing, yet she walked right up to our feet and slipped between the tripod legs. Indeed when a time picture of the eggs was required, one had to prevent her from walking in and spoiling the picture. That she was perfectly at home with us, was proved by the easy, unconscious attitudes she took, often preening her feathers or stretching her wings in the most serene and graceful manner. One foot held up the wing, the other balanced the bird. Poising in this airy fashion she seemed some automaton of a fairy world, rather than an earthly intelligence. (Plate XIV, fig. 4.)

And she was very intelligent! On June 20 I watched her solve three problems, one provided by the crowded condition of her nest, the others by human interference. Her custom was to run straight into her nest without stopping at the edge. Without hesitation she would step directly on the eggs, each foot on an egg, and then, try to slip the feet between them before settling. But the eggs were so large and the nest so small, that there was little room for her feet. The right foot went down quite easily, but when the left tried, it squeezed and shoved in vain. Realizing that she would not succeed in this way, she made use of her bill, inserting it between the offending eggs and turning the small end of one around. Then she shoved the lining away to the side of the nest near the small end and having made a hole, inserted the foot. Her next move was to coerce a refractory egg under her feathers and then to tear out a piece of Eel-grass that annoyed her. At length content she sank into a wide-spread fluffy condition, the bill sunk, the eyes relaxed, and assumed that glazed appearance, which denotes a brooding bird unconscious of surroundings. (Plate XIV, fig. 3.) And all this happened while my head was within three feet of hers!

It seemed a pity to disturb her, but I had my own problem for her. Forcing her off, I filled her nest full of sticks and waited. Immediately she came up and ran right over the top of the nest. Stopping on the opposite side, she stood stock still a full minute unable to grasp the changed conditions. Then, for the first time



3. ADULT LEAST SANDPIPER, INCUBATING. UNCONSCIOUS ATTITUDE.



4. ADULT LEAST SANDPIPER, STRETCHING WING.

this bird evinced active concern, for she began to run in and out of the tussocks, searching frantically in all directions, now and then halting to get bearings and constantly giving vent to that pathetic little call. (Call records No. 2 and 3.) Fearing she might abandon the home, I thought to relieve her, when at that moment she ran up to the sticks again, glanced at a tuft of grass four inches to the right, which seemed to be a landmark, gazed at the sticks searchingly, and at length recognized the nest. Instead of trying to lift the sticks out, she attempted to shove under them, but found them too bulky to move. So she pried them up with her bill, gradually working into the nest as she pried. (Plate XIII, fig. 1.)

Again I flushed her and determined to make as hard a problem as possible. First, I stamped down the tufted hillock which threw shadows from the setting sun and next, covered the nest completely with a mass of yellow straw. Again she overran the nest and this time seemed completely bewildered. Astonished by the disappearance of the landmark, she ran swiftly away, as if bewitched, and crouched flat in a mud-hole, her whole attitude being one of fright. But it was not long before she adjusted her ideas to the new conditions, ran up to the straw, inserted the bill underneath, and crept under. Her body struggled under the burden and disappeared; the straw shook convulsively, evidence that the home was being put to rights. For an instant it seemed she would walk off with the new roof, but finally the struggles subsided and a head popped out with a frightened look as much as to say: "What new plots are you concocting now?"

In order to secure photographs I had to disturb her a number of times and the last time, she retired five feet to the east and without warning shot up into the sky. As she flew, she sang the flight song. (Song record No. 1.) I hoped she would return, but no, she kept on ascending and singing as she climbed, repeating the song over and over with but slight pause. A certain wildness about it betokened final farewell and it certainly was final for that afternoon. Two days later contrary to my fears, I found her again on her nest, a returned songster.

This day the 22nd, I determined to catch her in order to ascertain positively that there was no webbing between the toes. Kneeling

on the ground, I gradually moved my hand through the short grass. Each time she rose from the eggs, the hand halted and waited for her to drop again. Sometimes I feigned with the other hand to draw her attention. As the hand got nearer, her breathing became heavier and the breast feathers palpitated visibly. At length my first finger touched her neck and she raised slightly only to sink again, when it stroked her. A minute later her neck was almost surrounded and she resented the uncomfortable feeling only by hunching upwards. Then, just as the fingers were about to close, she slipped out from under and was free. Keeping my hand circled about the nest I waited. Almost instantly she returned and crept under my hand. I closed the fingers and lifted her for examination. She endured it patiently and, when I let her go, flew but a short distance, straightened out the ruffled feathers, and in three minutes was back on the nest!

In the midst of this operation one egg hatched before my eyes. It broke open violently, as if by explosion, the two sections shooting to opposite sides of the nest and the new youngster burst valiantly into the world. Immediately the wet wings began to strike out vigorously and tossed the smaller section of the shell out of the nest. The mother was manifestly perturbed about her new baby, plainly concerned at my presence on such an important occasion. She rushed up to the nest, hesitated uneasily, constantly uttering solicitous call-notes (Call record Nos. 4, 5 and 6), and finally brooded. Entering she stepped right on the head and neck of the precious new-born, just as she had trod on the eggs previously. Perhaps she would not have been guilty of this flagrant misconduct, if my presence had not embarrassed her. At this moment I left her and, when I returned, found her walking about some feet from the nest. Both sections of shell had disappeared and could not be found, though I searched long. Two days later the nest was empty, the young undiscoverable, but the wee parent was still walking about as tame as ever. Again I almost caught her, getting my hand within six inches of her. Whenever I started the imperceptible stalking motion, she always acted as if mesmerized and the recovery from the state of seeming paralysis was announced by tremulous call-notes.

The field bird, whose nest was discovered by Mr. Baily June 25

in a damp grassy field, was almost as tame as the marsh bird. This being the first day of sunlight we had enjoyed with these birds, I determined to catch her too and secure a good photograph. With the camera set up five feet from the nest, a ten foot hose attached, and the bulb in my left hand, I proceeded to work my right hand toward the bird. From the start she proved to be more nervous than the marsh bird and, when my hand got close, fluttered off precipitately. Then, I curved the hand about the nest hoping she would creep under it as the marsh bird had done, but she began to pull at the grasses, we had tramped down in the vicinity. At first this action had been merely protective, for she began it sitting on the nest, lifting the blades and making them assume their former upright position of concealment. Now on the contrary the act was a nervous one, for she straightened grasses some distance away and always did it, when I circled the nest with my hand. Each time I moved away she would return and incubate. It was evident that there was more chance of catching her by moving the hand towards her than by waiting for her to return. Proceeding in this fashion after an hour's effort I accomplished the trick. She struggled violently, but did not attempt to pick my hand.

Like the other Least Sandpipers she possessed a flight song and gave snatches of it from the ground. Once she rendered it entire, within a foot of my hand! It consisted of a series of trills, which ascended just one octave on a minor chord. (Song record No. 2.) The tone quality was pure and sweet and rendered pathetic by the minor chord, which served as its medium. This, however, is distinctly a flight song and, I believe, delivered from the ground only under spur of excitement. Slipping out of my hand a moment later she uttered it with a wild frenzy, as she whirled excitedly aloft. Out over the Lagoon she went, farther and farther, higher and higher, till her wee form vanished from sight, but for several minutes afterwards that pathetic ascension of sound reached my ears, constantly leaping upwards, only to return to its starting point and leap again. Three minutes later I heard it once more approaching and shortly after, she pitched down near the nest and in a few seconds was once more brooding, as if no untoward incident had happened!